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FORM PTO-1390 (Modified) (REV 11-98) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER	U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR
PF980036	09/719182

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/FR99/01357	08 June 1999 (08.06.99)	08 June 1998 (08.06.98)

TITLE OF INVENTION

METHOD FOR PROGRAMMING RESOURCE ACTIONS IN A DOMESTIC COMMUNICATION NETWORK

APPLICANT(S) FOR DO/EO/US

Fabienne Coez and Nicolas Fannechere

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210). attached to Item 13
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98. with references attached
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A change of power of attorney and/or address letter.
19. ☒ Certificate of Mailing by Express Mail 20. Return Postcard Receipt
20. ☒ ~~Other items or information:~~

CERTIFICATE OF MAILING UNDER 37 CFR 1.10

EL667108575US — "Express Mail" mailing no.

December 8, 2000 — Date of Deposit

I hereby certify that this application is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Eliza Buchalczyk — Typed or printed name of person mailing application

E Buchalczyk — Signature of person mailing application

PCTUS1/REV03

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
09/719182	PCT/FR99/01357	PF980036

21. The following fees are submitted:.	CALCULATIONS PTO USE ONLY
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :	
☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO $1000.00	
☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but Internation Search Report prepared by the EPO or JPO $860.00	
☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO $710.00	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) $690.00	
☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) $100.00	
ENTER APPROPRIATE BASIC FEE AMOUNT =	860.00
Surcharge of $130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	5 - 20 =	0	x $18.00	
Independent claims	1 - 3 =	0	x $80.00	
Multiple Dependent Claims (check if applicable).			☐	

TOTAL OF ABOVE CALCULATIONS	=	860.00
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). ☐		
SUBTOTAL	=	860.00
Processing fee of $130.00 for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).	+	
TOTAL NATIONAL FEE	=	860.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐		
TOTAL FEES ENCLOSED	=	860.00
	Amount to be: refunded	$
	charged	$ 860.00

☐ A check in the amount of to cover the above fees is enclosed.

☒ Please charge my Deposit Account No. 07-0832 in the amount of $860.00 to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. 07-0832 A duplicate copy of this sheet is enclosed.

OTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 137(a) or (b)) must be filed and granted to restore the application to pending status.

END ALL CORRESPONDENCE TO:

Mr. Joseph S. Tripoli
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NAME

36,269
REGISTRATION NUMBER

December 8, 2000
DATE

00 DEC 11 PM 12:21

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Fabienne Coez and Nicolas Fannechere

Filed : Herewith

For : METHOD FOR PROGRAMMING RESOURCE ACTIONS IN A DOMESTIC COMMUNICATION NETWORK

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Sir:

In the US national phase application of PCT/FR99/01357 filed herewith, please enter the following amendments

IN THE SPECIFICATION:

Page 1, lines 1-2, please amend the title to read – METHOD FOR PROGRAMMING RESOURCE ACTIONS IN A DOMESTIC COMMUNICATION NETWORK --.

IN THE ABSTRACT:

Please add the Abstract as follows:

-- Process for programming actions of resources in a network of domestic devices. This process includes the steps of:

- sending a request for programming an action by a client application to a manager of preprogrammed actions of a device of the network, the programming request including a set of parameters defining the action and a list of resources involved in accomplishing the action,
- verification by the actions manager of the availability of the resources involved in accomplishing the action,
- transmission to the client application of a message of acceptance or of refusal of the action on the part of the preprogrammed actions manager depending on the result of the verification. The invention applies in particular in a network based on an IEEE 1394-1995 bus and using the 'HAVi' architecture. --

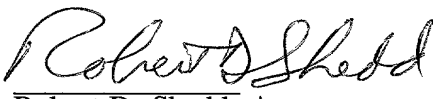
REMARKS

The title has been amended to conform to the translated title of the published application (WO 99/65189).

To meet the requirements of the United States Patent and Trademark Office, the Abstract (as originally filed) has been added.

No fee is believed to have been incurred by virtue of this amendment. However if a fee is incurred on the basis of this amendment, please charge such fee against deposit account 07-0832

Respectfully submitted,
Fabienne Coez
Nicolas Fannechere



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December 8, 2000

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Process for programming actions of resources in a domestic communication network

BACKGROUND OF THE INVENTION

The invention relates to a process for programming actions of resources, that is to say of facilities of devices, in a domestic communication network, in particular a network which includes an IEEE 1394-1995 serial bus.

In a domestic communication network to which audio/video devices or "nodes" are linked, a user ought to have the possibility of programming an action to be performed by one of the devices from any device possessing a display. By way of example, it ought to be possible to programme the recording of a transmission by any recording device, for example a video recorder, from any television set or other display means linked to the network.

BRIEF SUMMARY OF THE INVENTION

The invention relates to a process for programming actions of resources in a network of domestic devices, characterized in that it includes the steps of:

- sending a request for programming an action by a client application to a manager of preprogrammed actions of a device of the network, the said programming request including a set of parameters defining the action and a list of resources involved in accomplishing the action,
- verification by the said actions manager of the availability of the resources involved in accomplishing the action,
- transmission to the client application of a message of acceptance or of refusal of the action on the part of the preprogrammed actions manager depending on the result of the said verification.

According to a particular embodiment, the client application selects a preprogrammed action manager situated in a device other than the client application itself.

According to a particular embodiment, the process includes the step of storage by each resource involved of its agenda with respect to the action.

According to a particular embodiment, the verification step comprises a request of the preprogrammed actions manager from each resource involved aimed at ascertaining the availability of the resources involved by way of their respective agendas.

According to a particular embodiment, at the start time of the action, the preprogrammed actions manager performs the following tasks:

- reservation of the resources involved;
- establishment of the requested connections between the resources involved;
- instigating of the commands with the resources involved.

BRIEF DESCRIPTION OF THE DRAWINGS

Other characteristics and advantages of the invention will become apparent through the description of two nonlimiting exemplary embodiments illustrated by the appended figures in which:

- Figure 1 is a diagram of part of a domestic network representing the manner of operation according to the first exemplary embodiment,
- Figure 2 is a diagram of part of a domestic network representing the manner of operation according to the second exemplary embodiment,
- Figure 3 is a schematic representing data exchanges according to the first exemplary embodiment,
- Figure 4 is a schematic representing data exchanges according to the second exemplary embodiment.

DETAILED DESCRIPTION OF THE INVENTION

The present description relates to a domestic network based on a serial bus conforming to IEEE 1394-1995, as well as on the architecture referred to as the 'HAVi' architecture, defined in the document 'The HAVi Architecture - Specification of the Home Audio/Video interoperability Architecture' dated 11 May 1998, version 0.8, published on 15 May 1998 on the Internet sites of the Sony, Hitachi, Toshiba, Philips and Sharp companies. A new version of the HAVi document (version 1.0beta+) has been published between the priority date and the date of filing of the present patent application.

Two patent applications filed in the same name as the present application deal in greater detail with certain aspects of the architecture of the network. These are French Patent Application No. 9805110 of 23 April 1998 entitled 'Procédé de gestion d'objets dans un réseau de communication et dispositif de mise en œuvre' [*Process for managing objects in a communication network and device for implementing same*], as well as a French patent application filed on the same day as the priority application of the present application and entitled 'Procédé de gestion de priorités d'accès à des ressources dans un réseau domestique et appareil de mise en œuvre' [*Process for managing priorities of access to resources in a domestic network and device for implementing same*]. The latter patent application bears the number FR 9807186. The first patent application relates to the implementation of registries of objects or of resources in the devices connected to the network, this registry maintaining an up-to-date list of resources or software modules available at local level in a device, whilst the second patent application concerns a resource manager which manages the resource reservation for resources available locally and participates in

resolving conflicts of access to - or of reservation of - these resources.

To execute an action, such as recording of a transmission, an application may require access to public resources. The expression public resources is understood within the present context to mean facilities of devices other than the device in which the application is being executed, but which are potentially accessible by this application. The resources which are locally accessible by the application, and also the bandwidth, also form part of the public resources. An application can itself be a resource. The registries mentioned above maintain an up-to-date list of the public resources available, and an application can determine which these resources are by despatching a request at the level of its local registry, which can propagate this request to the other registries.

The designation 'software module' (to use the terminology of the HAVi document) denotes applications, resources and services of a device.

Two exemplary embodiments will be given. According to the first exemplary embodiment, certain functions relating to the implementation of preprogrammed actions are performed by what will be referred to as a 'main resource' in what follows, whilst, according to the second exemplary embodiment, these functions are catered for by an object independent of the resources involved in a preprogrammed action, namely the preprogrammed actions manager ('PAM').

EXAMPLE 1

The implementation of a preprogrammed action according to the first exemplary embodiment involves:

- a client application,
- a main resource referred to as the 'target resource' or simply the 'target',

- as appropriate one or more other public resources, referred to as the 'resources involved', also required to implement the preprogrammed action.

Within the framework of a recording request, the target is for example the recording facility of a digital recording device (digital video recorder, DVD, etc) whilst a resource involved is a tuner. Other resources may be required: for example a transcoder, required to translate the format of the data into the format of the recording device, an access control service for authorizing access to secure programmes, etc.

Account will be taken of the requirement for the process for implementing the preprogrammed action to operate normally even if the display device by way of which the action was programmed has been rendered inactive (for example, the user has turned off the television set which served him in respect of the programming of a video recorder). It is assumed that this device does not comprise any resources involved (the main resource forming part of the resources involved).

The target does or does not accept the action requested by the application. When programming this action, the target must identify the resources required for the accomplishment of the action and reserve them for the requisite period of time. When the action is actually executed, the target and the resources involved must synchronize themselves. The consequence of this is that information relating to the preprogrammed action has to be stored in the network. According to the first exemplary embodiment, it is the target which stores this information and executes the action, whilst, according to a second embodiment, it is another module which will be responsible for these functions. A preprogrammed action can be defined by a certain number of items of information, collected in a particular data structure filled in by the application

programming the action and stored by the target resource.

- The type of action
- Parameters relating to the action (commands to be performed in respect of each resource involved, list of connections to be established before instigating the action)
- A date
- A start time
- An end time
- The periodicity of the action
- An identifier of the target resource
- The identifiers of the resources involved
- User data

The type of the action depends on the nature of the target. By way of example the action can be 'RECORD' or 'READ' for a resource having a mass memory facility, or 'SELECT_SERVICE' for a digital television demultiplexer.

The parameters, which depend on the action to be performed, serve to define the action in a more specific manner at the level of each resource. A parameter can be an event or a service within the meaning of the DVB digital video broadcast standard. In this case, the parameters will comprise an identifier of the type of parameter, followed by the value of the parameter.

Certain devices of the network may not include processing means for providing a service of this level. For example, a recording device may not accept parameters after a 'RECORD' command, since it is not itself able to control a tuner, whilst a more complex device, having this possibility, will be able to accept a command of the type 'RECORD service X'.

The date, the start and end times and the periodicity of the action are conventional information.

The identifier of the target resource is required so that an application can modify an already-programmed action. This field is not required if the

target stores the preprogrammed action directly (i.e. if this resource is itself the main resource of a programmed action).

If for example an application wishes to ascertain which programmed action is associated with a given resource, it will ask this resource for the identifiers of each of the programmed actions in which this resource is involved. The application will then be able to consult the data structure of the programmed action which it has chosen, then will be able to modify it (this application may for example be that of a user interface, possibly controlled by a user other than the one who programmed the action which will be modified).

The identifiers of the resources involved are used, according to the first exemplary embodiment, by the target. The list allows the target to request information relating to the resources involved, for example by way of the registries, or by transmitting messages to them directly.

The user data include for example in plain text the motive for the action, this possibly being important in the case of conflict with an action programmed earlier. In this case, when the conflict must be resolved by a user, typically the one programming the most recent action, these data may afford him indications as to the importance of the action.

The resources involved contacted by the target resource will themselves also have to store some of the content of the above data structure: the information relating to the time and, possibly, the type of action, the parameters and the user data.

The first exemplary embodiment is illustrated by Figure 1. The network part represented by this figure comprises five devices. Device 1 is a television set, located in a kitchen and comprising an application 2 (for example a user interface allowing the programming of all the devices of the network). Device 3 is also a television set, this time situated

in the bedroom and furnished with an application 4, similar to the application 2. The device 5 is a digital satellite television decoder comprising a tuner resource 6 and a resource manager 7, whilst the device 8 is a DVD-type digital recording device, in this regard comprising the recording resource 9 and a resource manager 10. Finally, the device 11 is for example another decoder, which possesses a facility for transcoding the audio/video data coded according to a first format (that of the decoder 5) into a second format (that of the recording device 8). The device 11 consequently possesses a transcoding resource 12 and a resource manager 13. The various devices, which can comprise software modules other than those illustrated, are linked by a serial bus 14, for example an IEEE 1394-1995 bus.

According to the first exemplary embodiment, the target resource, in the present case the recording function of the device 8, itself incorporates an application capable of managing the recording action.

It is assumed that a user wishes to record a transmission on a service X, at 20.30, on 12 December 1999, for a duration of two hours. Although, in the example of Figure 1, a single resource of tuner type and a single resource of transcoding type exist in the network, the user could, in a network where several resources of the same type coexist, choose from among several resources of the same type of the network that which he prefers to participate in the execution of the action.

When the target resource 9 receives the programmed action from the application 2, it performs an auto-reservation with the local resource manager 10, by proceeding in the manner described in the second patent application mentioned at the start of this description. Moreover, it performs the reservation of the resources involved (tuner 6, transcoder 12) with the remote resource managers (managers 7, 13 respectively). Each resource manager stores the data

relating to the reservation of the resources associated therewith (that is to say of the resources having the same execution platform as this resource manager).

Once the reservations have been made, the target transmits a confirmation message to the application 2 from which the action originated.

In the case of a conflict of reservation, for example in case of override or negotiation for a resource already reserved for an action given by an application programming another action, the resource manager advises the target which programmed the first action by an appropriate message. In fact, for this purpose, each resource manager stores the identifier or the address of the software module which has made a reservation.

At this juncture, should the device 1 be unplugged, the preprogrammed action will nevertheless be executed, since all the information relating to the action is stored at the level of the target.

A user can modify or delete the preprogrammed action from another application, such as the application 4. If the application 4 wants to access all the programmed actions concerning a given resource (which is found by way of the local registry of the application), the resource contacted by the application can give the identifiers of the main resources of each of the programmed actions in which it is involved. The entire data structure describing the programmed action can thereafter be retrieved by contacting each main resource directly.

When the action starts, the target links the various resources by virtue of the local software module referred to as the connection manager (or 'SM' standing for 'Stream Manager' according to the terminology of the HAVi document).

A resource can be designated under the terms function component manager ('FCM' according to the HAVi terminology). The architecture can then be represented by the diagram of Figure 3, where an application

transmits an action programming to the application programming interface forming part of the target.

More generally, resources other than FCMs exist within the HAVi framework. For example, another type of resource exists, referred to as the 'DCM' standing for 'Device Control Manager' or alternatively device control manager. Whereas an FCM is the software representation of a function of a device, a DCM is the software representation of a device and can incorporate several FCMs in this regard. A DCM is then an intermediary between a main application making a reservation and one or more FCMs contained in the DCM.

EXAMPLE 2

The second exemplary embodiment is illustrated by Figure 2. It is assumed here that resources do not incorporate applications capable of managing the preprogrammed actions as in the first exemplary embodiment. One will speak in this case of 'passive resources'. The latter may however store some of these data (for example the timetables for the actions which they must perform and possibly parameters and user data), as indicated in the first exemplary embodiment.

The client application 15 initiating the programming of the action is as in the first example an interface localized within a television set 16. The recording device 17 includes the digital recording resource 18, another resource 19, and a resource manager 20. The device 5 is identical to that of Figure 1.

According to the present exemplary embodiment, the device 17 also includes a preprogrammed actions manager 21 ('PAM'). This actions manager 21 is a service within the meaning of the HAVi document and makes all the reservations required for the accomplishment of the action. There is only one functional difference between the preprogrammed actions manager and the resource manager. Whereas the preprogrammed actions manager manages the preprogrammed actions, the resource manager manages the reservations

corresponding to the actions and any conflicts which may ensue. These two functions can be incoporated into one and the same software object, as indicated in Figure 2. The separate representation of the PAM and of the RM is used simply for the sake of consistency with the first exemplary embodiment, where these functions were implemented by distinct objects.

The actions manager 21 manages the passive resources of the device 17, and also of the device 5.

The implementation of a preprogrammed action according to the second exemplary embodiment involves:

- a client application;
- a preprogrammed actions manager ('PAM');
- one or more public resources referred to as the 'resources involved', required to implement the preprogrammed action.

Within the framework of a recording request, the resources involved are for example:

- the recording facility of a digital recording device (digital video recorder, DVD, etc),
- a tuner.

Other resources may be required: for example a transcoder, required to translate the format of the data into the format of the recording device, an access control service for authorizing access to secure programmes, etc.

Account will be taken of the requirement for the process for implementing the preprogrammed action to operate normally even if the display device by way of which the action was programmed has been rendered inactive (for example, the user has turned off the television set which served him in respect of the programming of a video recorder). Consequently, this device preferably does not include the resources involved.

The preprogrammed actions manager does or does not accept the action requested by the client application. The latter has previously identified the resources required for the accomplishment of the

action, the commands to be performed at the start time of the action and the connections required between the various resources which need to be established before the start time of the action.

The PAM stores all these data of the action, and returns an identifier of the action to the client application. Moreover, each resource involved stores its own agenda as to the actions to be performed. This agenda includes in particular the timetables of the reservations, but not the commands and connections related to the actions. This would necessitate too much memory room. By virtue of this agenda, each resource can inform other PAMs instigating actions of its availability or unavailability for these actions.

Before accepting or rejecting a request for action, the PAM interrogates each resource so as to ascertain whether it is available between the start and end times of the action. At the start time of the action, if all the resources are present, the PAM reserves the resources (here, this entails reservation proper, as compared with simple agenda indications programmed previously), establishes the necessary connections and instigates the commands. The establishing of the connections is requested of the local software module referred to as the connections manager (or 'SM' or 'Stream Manager' according to the terminology of the HAVi document).

If one of the resources involved in a preprogrammed action disappears before the start time of the action, the latter is suspended until the resource is again available on the network. If the missing resource reappears, even after the start time of the preprogrammed action, the action is nevertheless executed, although shifted in time.

A preprogrammed action can be defined by a number of information items, collected in a particular data structure filled in by the application programming the action and stored according to the second exemplary embodiment by the preprogrammed actions manager.

- The type of action
- Parameters relating to the action (commands to be performed in respect of each resource involved, list of connections to be established before instigating the action)
- A date
- A start time
- An end time
- The periodicity of the action
- The identifiers of the resources involved
- User data

The various elements have a similar meaning to what was described in conjunction with the first exemplary embodiment.

If an application wants to ascertain which preprogrammed action is associated with a given resource, it can consult all the programmed actions which are recorded in a PAM. It could also request from the resource the identifiers of each of the preprogrammed actions in which this resource is involved. It can therefore retrieve the identifier of the PAM which maintains the data of a given preprogrammed action.

An application also has the possibility of cancelling a preprogrammed action, or of modifying such an action, at the PAM in charge of this action.

The identifiers of the resources involved are used according to the second exemplary embodiment by the PAM. The list enables the PAM to request information relating to the resources involved, for example by way of the registries, or by transmitting messages directly to them.

The PAM distributes the preprogrammed action to the device control managers (DCM - see hereinbelow) of the resources involved, with all the parameters required for each resource. Each resource (or their DCM) must determine whether the connections requested and the commands envisaged will be able to be performed at the time envisaged.

If the resources are capable of honouring the request, they advise the PAM of this, the latter returning an identifier of the action to the client application to signal to it that the action has been taken on board.

If the resources are not capable of honouring the request, or if one of the requested resources is not present on the network, or else if the overriding of a resource involved and already reserved within the framework of another action has not been possible, the PAM refuses the preprogrammed action, transmitting an appropriate message to the client application.

In case of conflict of reservation, for example in case of override or negotiation of an unavailable resource, the PAM advises the client application which programmed the action by an appropriate message. In fact, for this purpose each PAM stores the identifier or the address of the application which has made a reservation.

A resource can be designated under the terms function component manager ('FCM' according to the HAVi terminology). The architecture can then be represented by the diagram of Figure 3, where an application transmits an action programming to the application programming interface forming part of the target.

More generally, resources other than FCMs exist within the HAVi framework. Another type of resource likewise exists, referred to as the 'DCM' standing for 'Device Control Manager' or alternatively device control manager. Whereas an FCM is the software representation of a function of a device, a DCM is the software representation of a device and can incorporate several FCMs in this regard. A DCM is then an intermediary between a main application making a reservation and one or more FCMs contained in the DCM.

Figure 4 is a simplified diagram of the principle of the second embodiment. To summarize, to programme an action, an application addresses itself to the preprogrammed actions manager, which is necessarily

present in the device comprising the target resource. The application acts through the programming interface of the actions manager, which in turn acts through the programming interface of the target. The device comprising the manager and the target is either a device with full facilities ('FAV'), or a device with intermediate facilities ('IAV').

Claims

1. Process for programming actions of resources in a network of domestic devices, including the steps of:

- sending a request for programming an action by a client application to a manager of preprogrammed actions of a device of the network, the said programming request including a set of parameters defining the action and a list of resources involved in accomplishing the action,

- verification by the actions manager of the availability of the resources involved in accomplishing the action,

- transmission to the client application of a message of acceptance or of refusal of the action on the part of the preprogrammed actions manager depending on the result of the verification.

2. Process according to Claim 1, wherein the client application selects a preprogrammed action manager situated in a device other than the client application itself.

3. Process according to Claim 1, further including the step of storage by each resource involved of its agenda with respect to the action.

4. Process according to Claim 1, wherein the verification step comprises a request of the preprogrammed actions manager from each resource involved aimed at ascertaining the availability of the resources involved by way of their respective agendas.

5. Process according to Claim 1, wherein, at the start time of the action, the preprogrammed actions manager performs the following tasks:

- reservation of the resources involved;

- establishment of the requested connections between the resources involved;

- instigating of the commands with the resources involved.

Abstract

Process for programming actions of resources in a network of domestic devices.

This process includes the steps of:

- sending a request for programming an action by a client application to a manager of preprogrammed actions of a device of the network, the programming request including a set of parameters defining the action and a list of resources involved in accomplishing the action,
- verification by the actions manager of the availability of the resources involved in accomplishing the action,
- transmission to the client application of a message of acceptance or of refusal of the action on the part of the preprogrammed actions manager depending on the result of the said verification.

The invention applies in particular in a network based on an IEEE 1394-1995 bus and using the 'HAVi' architecture.

Fig. 1.

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(54) Title: METHOD FOR PROGRAMMING RESOURCE ACTIONS IN A DOMESTIC COMMUNICATION NETWORK

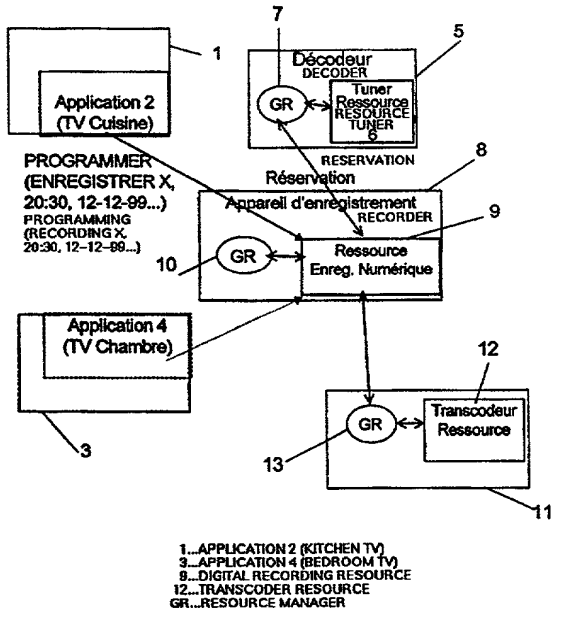
(54) Titre: PROCEDE DE PROGAMMATION D'ACTIONS DE RESSOURCES DANS UN RESEAU DE COMMUNICATION DOMESTIQUE

(57) Abstract

The invention concerns a method for programming resource actions in a domestic apparatus network, characterised in that it consists in: transmitting a request for programming an action by a client application to a pre–programmed action manager of an apparatus of the network, said request comprising a set of parameters defining the action and a list of resources required for performing the action; verifying by said manager of actions whether the resources required for performing the action are available; transmitting to the client application a message accepting or refusing the action by the manager of pre–programmed actions based on the verification result. The invention is particularly applicable in a network based on a IEEE 1394–1995 bus and using the HAVi architecture.

(57) Abrégé

L'invention concerne un procédé de programmation d'actions de ressources dans un réseau d'appareils domestiques. Ce procédé est caractérisé en ce qu'il comporte les étapes de: émission d'une demande de programmation d'une action par une application cliente vers un gestionnaire d'actions préprogrammées d'un appareil du réseau, ladite demande de programmation comportant un ensemble de paramètres de définition de l'action et une liste de ressources impliquées dans l'accomplissement de l'action; vérification par ledit gestionnaire d'actions de la disponibilité des ressources impliquées dans l'accomplissement de l'action; transmission à l'application cliente d'un message d'acceptation ou de refus de l'action de la part du gestionnaire d'actions préprogrammées en fonction du résultat de ladite vérification. L'invention s'applique notamment dans un réseau basé sur un bus IEEE 1394–1995 et utilisant l'architecture "HAVi".



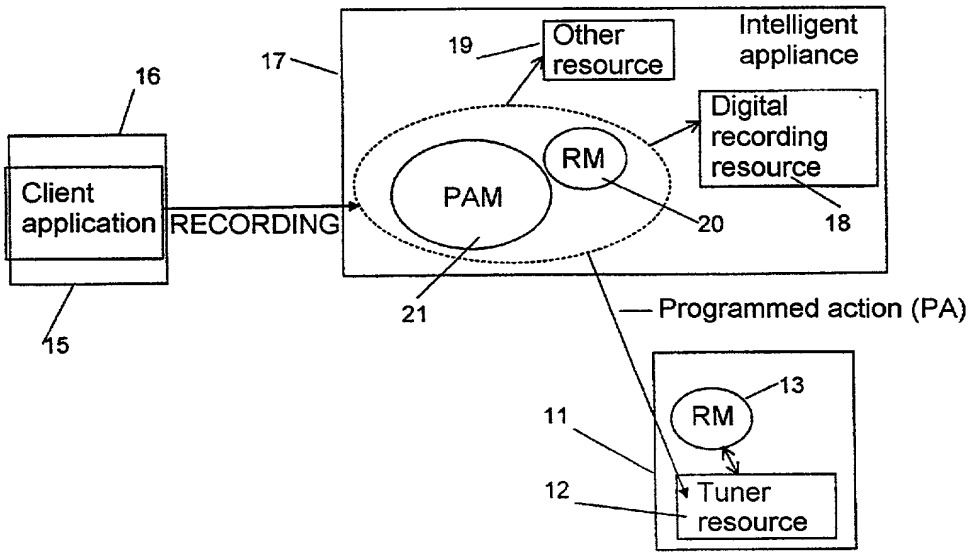

Intelligent appliance
Other resource
19
17
16
Digital recording resource
RM
PAM
Client application
RECORDING
20
18
21
15
Programmed action (PA)
13
RM
11
Tuner resource
12

Fig. 2

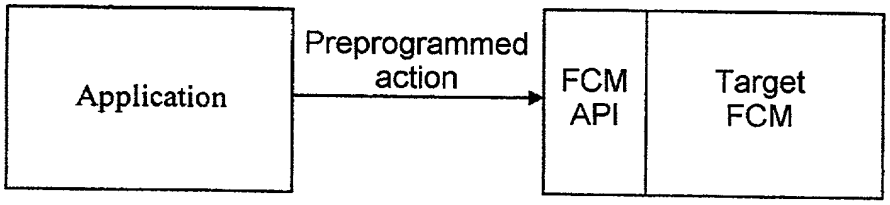

Application
Preprogrammed action
FCM API
Target FCM

Fig. 3

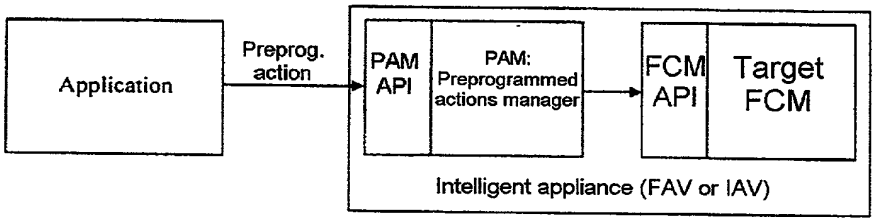

Application
Preprog. action
PAM API
PAM: Preprogrammed actions manager
FCM API
Target FCM
Intelligent appliance (FAV or IAV)

Fig. 4

DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Process for programming actions of resources in a domestic communication network

the specification of which
(CHECK ONE) ( ) is attached hereto.
(XX) was filed on December 8, 2000, Application Serial. No. 09/719182 and was amended on .

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

I hereby claim foreign priority benefits under 35 USC 119 of any foreign application(s) for patent, utility model, design or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
Number	Country	Date Filed	Yes	No
9807187	FR	June 8, 1998	xx	

I hereby claim the benefit under 35 USC 120 of any US Application(s) listed below, and, insofar as the subject matter of each of the claims of this Application is not disclosed in the prior US application in the manner provided by the first paragraph of 35 USC 112, I acknowledge the duty to disclose information which is material to the examination of this application in accordance with 37 CFR 1.56(a).

Serial No.: Filed:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under of 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Joseph S. Tripoli (Reg. No. 26,040), Dennis H. Irlbeck (Reg. No. 26,372), Eric Herrmann (Reg. No. 29,169) and Joseph J. Laks (Reg. No. 27,914) Telephone: (609) 734-9813.

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DECLARATION FOR UNITED STATES PATENT APPLICATION,
POWER OF ATTORNEY, DESIGNATION OF CORRESPONDENCE ADDRESS

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name, and that I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Process for programming actions of resources in a domestic communication network

the specification of which
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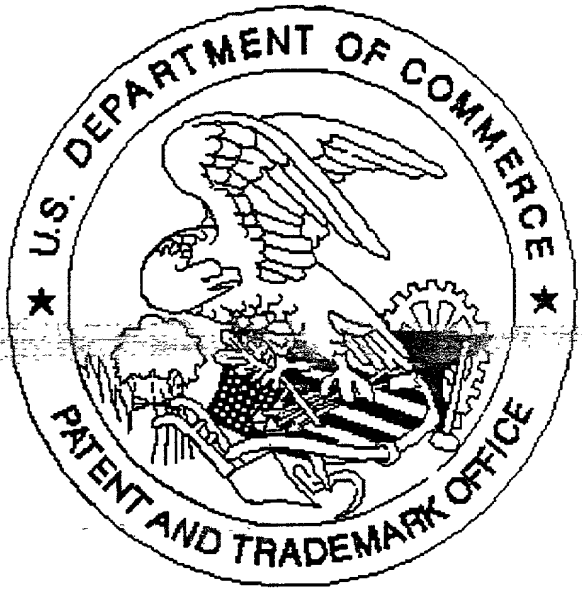

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